

AMENDMENTS

IN THE CLAIMS

Please amend claims 67, 70, 72, 73, 74 and 76 as shown below.

1. -51. (Canceled)

52. (Previously Presented) A luminescent semiconductor nanocrystal probe, comprising:

- a) a water-soluble semiconductor nanocrystal comprising:
 - i) a core comprising a first semiconductor material; and
 - ii) a core-overcoating shell comprising a second semiconductor material;
- b) a linking agent comprising a first portion and a second portion, wherein said first portion is linked to said water-soluble semiconductor nanocrystal; and
- c) an affinity molecule linked to said second portion of said linking agent.

53. (Previously Presented) The probe of claim 52, wherein said first semiconductor material is a II-VI semiconductor or a III-V semiconductor.

54. (Previously Presented) The probe of claim 53, wherein said first semiconductor material is a II-VI semiconductor.

55. (Previously Presented) The probe of claim 53, wherein said first semiconductor material is a III-V semiconductor.

56. (Previously Presented) The probe of claim 54, wherein said first semiconductor material is MgS, MgSe, MgTe, CaS, CaSe, CaTe, SrS, SrSe, SrTe, BaS, BaSe, BaTe, ZnS, ZnSe, ZnTe, CdS, CdSe, CdTe, HgS, HgSe, or HgTe.

57. (Previously Presented) The probe of claim 55, wherein said first semiconductor material is GaAs, InGaAs, InP, or InAs.

58. (Previously Presented) The probe of claim 52, wherein said second semiconductor material is a II-VI semiconductor or a III-V semiconductor.

59. (Previously Presented) The probe of claim 58, wherein said second semiconductor material
is a II-VI semiconductor.

60. (Previously Presented) The probe of claim 58, wherein said second semiconductor material is a III-V semiconductor.

61. (Previously Presented) The probe of claim 59, wherein said second semiconductor material is MgS, MgSe, MgTe, CaS, CaSe, CaTe, SrS, SrSe, SrTe, BaS, BaSe, BaTe, ZnS, ZnSe, ZnTe, CdS, CdSe, CdTe, HgS, HgSe, or HgTe.

62. (Previously Presented) The probe of claim 60, wherein said second semiconductor material is GaAs, InGaAs, InP, or InAs.

63. (Previously Presented) The probe of claim 52, wherein said first semiconductor material is CdSe and said second semiconductor material is ZnS.

64. (Previously Presented) The probe of claim 52, wherein said linking agent comprises a thiol moiety.

65. (Previously Presented) The probe of claim 64, wherein said linking agent further comprises an alkyl group.

66. (Previously Presented) The probe of claim 65, wherein said alkyl group is a propyl group.

67. (Currently Amended) The probe of claim 52, wherein said linking agent is chosen from N-(3-aminopropyl)-3-mercapto-benzamide, 3-aminopropyl-trimethoxysilane, 3-mercapto-propyl-

trimethoxysilane, 3-maleimidopropyl-trimethoxysilane, and 3-hydrazidopropyl-trimethoxysilane.

68. (Previously Presented) The probe of claim 52, wherein said nanocrystal compound further comprises a glass coating on said shell.

69. (Previously Presented) The probe of claim 68, wherein said glass coating comprises a polymeric oxide.

70. (Currently Amended) The probe of claim 69, wherein said polymeric oxide is chosen from an oxide of silicon, an oxide of boron, an oxide of phosphorus, ~~or~~ and a mixture thereof.

71. (Previously Presented) The probe of claim 69, wherein said glass coating further comprises metal silicate, a metal borate or a metal phosphate.

72. (Currently Amended) The probe of claim 68, wherein said linking agent is chosen from ~~selected from the group consisting of~~ N-(3-aminopropyl)-3-mercapto-benzamide, 3-aminopropyl-trimethoxysilane, 3-mercaptopropyl-trimethoxysilane, 3-maleimidopropyl-trimethoxysilane, and 3-hydrazidopropyl-trimethoxysilane.

73. (Currently Amended) The probe of claim 52, wherein said affinity molecule is chosen from an antibody, a nucleic acid, a protein, a polysaccharide ~~or~~ and a small molecule.

74. (Currently Amended) The probe of claim 52, wherein said affinity molecule is chosen from avidin, streptavidin, biotin ~~or~~ and anti-digoxigenin.

75. (Previously Presented) The probe of claim 52, wherein said affinity molecule is streptavidin.

76. (Currently Amended) The probe of claim 52, wherein said linking agent is 3-mercaptopropyl-trimethoxysilane and said affinity molecule is chosen from avidin, streptavidin, biotin ~~or~~ and anti-digoxigenin.

77. (Previously Presented) The probe of claim 52, wherein said linking agent is 3-mercaptopropyl-trimethoxysilane and said affinity molecule is streptavidin.

78. (Previously Presented) The probe of claim 52, wherein said shell epitaxially surrounds said core.